as the cause of the characteristic erythema, for they have shown that a small fraction (up to 20 per cent) of these wave-lengths is able to penetrate through the avascular epidermis to the vascular corium. Further evidence that the effect of ultra-violet light on the skin blood-vessels is an indirect one would therefore seem of interest.

The following experiment was carried out. In each of six normal female subjects aged nineteen to twenty-three, three skin sites were marked out close together on the lower part of the back. Histamine was introduced into two of these three areas by iontophoresis; the anode (7·25 sq. cm.) of a d.c. circuit was applied to four layers of filter-paper soaked in a 10^{-4} gm./ml. solution of histamine, the cathode being a large pad of lint soaked in water and applied to the thigh. A current of 0·5 m.amp. was passed for 10 min. At the end of this time the skin was whealed and flared. Into one of the wheals a 2·5 per cent solution of tripelennamine hydrochloride ('Pyribenzamine', Ciba) was injected. All three sites were then exposed to ultra-violet light from a Kromayer lamp at contact range for 30 sec. The sites were inspected 24 hr. later. It was found that in each subject all three areas—control, whealed, whealed and injected with tripelennamine—showed a similar and normal sunburn response.

It is known that wheal fluid has a protein content similar to that of serum[3]. It is also known that serum[4], serum albumen[5] and tripelennamine hydrochloride[6] all strongly absorb the ultra-violet wave-lengths responsible for producing erythema. In the present experiment histamine was introduced into the skin by iontophoresis in order to involve the superficial blood vessels in a wheal and so provide them with a surrounding screen of serum-like fluid. An attempt was made to reinforce this screen in one of the two whealed areas by injecting tripelennamine hydrochloride into the wheal fluid. In spite of these screens, the development and appearance of vasodilatation following irradiation with ultra-violet light was quite normal. These observations supply further evidence that the ultra-violet wave-lengths responsible for vasodilatation act primarily on the epidermis and not directly on the blood vessels.

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Structures of Native and Mercerized Celluloses

In *Nature* of February 13, p. 298, Sen and Roy report new equatorial reflexions in the X-ray diagrams of native and mercerized celluloses; the corresponding mean spacings are 13·6 A. for native, and 14·4 A. for mercerized, cellulose. Similar extra reflexions have been reported from time to time, but they have always been found to be spurious, in the sense that they were not due to diffraction of the characteristic radiation that was employed. They may even appear when supposedly monochromatic radiation, obtained by reflexion from a crystal, is used, if precautions are not taken to eliminate radiation with a wave-length half that of the selected radiation[1,2]. However, a commoner cause of spurious reflexions is the diffraction of certain components of the 'white' radiation present in the X-ray beam when unfiltered or filtered radiation is used[3–6].

The most complete study of this phenomenon is that of Sisson, Clark and Parker[6], who showed that the effective components of the 'white' radiation have wave-lengths coinciding with those of the silver and bromine absorption edges. These workers had previously observed spots in the X-ray diagrams of native and mercerized celluloses that corresponded to apparent spacings of 13·4 A. and 14·2 A. respectively, and they were able to demonstrate that these spots were, in fact, silver absorption edges. Their observations and conclusions have been confirmed in these laboratories, and silver absorption edges that could be mistaken for $K\alpha$ reflexions have also been observed in X-ray photographs of nylon, 'Orlon' and silk.

Sen and Roy state that their X-ray photographs were taken "under various conditions of prevailing humidity, intensity and purity of radiation (including monochromatic radiation)"; they thus imply that the new reflexions were obtained even when monochromatic radiation was employed; but they give no details about the method used to obtain such radiation. There is nothing in their communication to suggest that they gave special consideration to the possibility that these reflexions might be spurious, and until this possibility has been fully tested it would be premature to conclude that the accepted structures of native and mercerized celluloses require revision.

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The article by M. K. Sen and S. C. Roy in *Nature* of February 13, p. 298, invites the following comments:

(1) A reflexion at $20 \simeq 6°$ which, if it resulted from copper $K\alpha$ radiation, would correspond to a Bragg spacing of ~ 14 A. is sometimes observed in X-ray photographs of cellulose (I, II, III or IV) when nickel-filtered radiation is used; but it is never observed with strictly monochromatic radiation (assuming that the cellulose is free from foreign matter having a spacing of this value).

(2) The intensity of this reflexion relative to (002) copper $K\alpha$ does not apparently depend upon whether the specimen is wet or dry, but is very sensitive to the particular copper anode in use at the time (demountable X-ray tube), being normally zero.

(3) The position of this reflexion is slightly different for each of the cellulose structures I, II, III and IV, and in every case is such that it would result from the reflexion of radiation of wave-length $\simeq 0·17$ A.